SCANNING USING POSITION TRANSMISSION FOR TRIGGERING THE RECORDING OF MEASURED VALUES

Claims

1. A method for measuring particularly surface topologies with microscopic resolution, in which a measuring sensor and a specimen to be detected are displaced in relation to each other in the x-y directions, whereby the displacement movement is controlled by means of a controller recording the values measured by the sensor; whereby the sensor is read out at defined intervals after the sensor and the displacement movement have been started, and individual detected profiles, which are locally offset from each other in a dimension extending perpendicular to the direction of the profile, are combined so as to form a measured area after the measurement has been completed, characterized in that via a software instruction, the displacement control is initiated to start the displacement movement, position-transmitting trigger pulses are tapped in discrete and constant local intervals from the displacing element for position-related readout of the sensor; derived position-related signals, which in turn are position-related, are generated from the basic signals so obtained by means of electronic data processing; such derived signals serving for triggering the recording of the measured values of the sensor; and the measured values so obtained are stored and then asynchronously transmitted to the controller.

2. A device for carrying out the method according to claim 1, comprising an interval sensor arranged above a surface of the specimen and a specimen carrier, said sensor and said specimen carrier being displaceable relative to each other by a motor drive in the x-y directions, a control for the displacement movement, and a controller is connected with the sensor for recording the measured values of the sensor, on the one hand, and with the control for the displacement movement on the other, characterized in that provision is made on the displaceable element (1, 3) for a position transmitter whose signals are converted by means of a displacement control (2() connected upstream of the sensor (1) and an interface connected downstream of the displacement control (2), into position-related, derived trigger signals for triggering the recording of the values measured by the sensor (1); and that the direction-dependent local increments are added up in a memory, whereby the detection of the direction takes place by means of a programming logic.

3. The device according to claim 2, characterized in that the specimen is arranged on a table (3) displaceable in the x-y directions.

4. The device according to claim 2, characterized in that the sensor (1) is displaceable in the x-y directions.

5. The device according to any one of claims 2 to 4, characterized in that for tapping the position-transmitting trigger pulses on the displaceable element (1, 3), provision is made for an incremental angle encoder mounted on the axle of the motor, with the direction of said encoder coinciding with the direction of displacement of the measuring profile.

6. The device according to any one of claims 2 to 4, characterized in that for tapping the position-transmitting trigger pulses on the displaceable element (1, 3) itself, an incremental or absolutely measuring position transmitter is provided.

7. The device according to claim 6, characterized in that the position transmitter is a glass scale.

8. The device according to any one of claims 2 to 7, characterized in that the interface (8) provided for deriving the basic signals comprises a programmable and storing microcontroller.

9. The device according to claim 8, characterized in that the microcontroller is a component of the displacement control (2).

10. The device according to any one of claims 2 to 9, characterized in that the controller (4) is a PC.

11. The device according to any one of claims 2 to 10, characterized in that the sensor (1) is an optically operating sensor.

12. The device according to claim 11, characterized in that the sensor (1) is a laser spot sensor.

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